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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CO 0178 PCT/Bo/A		FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/EP2004/004250	International filing date (day/month/year) 16.04.2004	Priority date (day/month/year) 16.04.2003	
International Patent Classification (IPC) or national classification and IPC B22F7/00, B32B15/01			
Applicant CORUS TECHNOLOGY BV et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  21.09.2004		Date of completion of this report  08.03.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Lilimpakis, E  Telephone No. +49 89 2399-2952	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/004250

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-19 as originally filed

**Drawings, Sheets**

1/1 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1,4,8,9,12,14
Inventive step (IS)	Yes: Claims	
	No: Claims	3,5,15,16,19
Industrial applicability (IA)	Yes: Claims	1-19
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V.**

- 1 The following documents are referred to in this communication:

D1 : DE 198 48 632 A (M I M HUETTENWERKE DUISBURG GM) 30 March  
2000 (2000-03-30)

2 **INDEPENDENT CLAIM 1**

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Claim 1 relates to a sandwich or laminate structure, in the pre-foaming condition, where the components suitable for foaming (preferably Al-Si alloy, according to subclaim 4, and a foaming agent) are not found in the known mixed powder form, but the alloy is in form of a sheet and the agent is deposited on said sheet.

- 2.2 D1 deals with a preform to be put within a space defined by two metallic sheets ("Hohlraum") of a structure suitable for vehicle parts, said preform is suitable for foaming (see col.1, l.39-60). The particular construction of said preform consists of a metallic sheet with preference to Al (col.3, l.41-47) upon which a foaming agent preferably  $TiH_2$  (col.4, l.10-16) is set. The preform put within the space of the metal layers ("Hohlraum") at the time before foaming is therefore a same construction as this actually claimed in cl. 1.

D1 solves the same problem as the present invention, namely, avoiding the use of powder constituents for the foam metal.

- 3 **DEPENDENT CLAIMS 2, 3, 4, 5, 8, 9, 10, 12, 14, 15, 19**  
Dependent claims 2, 3, 4, 8-10, 12, 14, 15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

**Claim 2** does not enjoy the priority right in that, the core is composed of at least a "foamable metal layer", which layer(s) are coated (at least one side) with a "foamable metal sheet" (i.e. according to cl.1 "foamable metal sheet" is a foamable metal and the agent). This combination of features were not in the original application and moreover, no information or features or effects of this new

structure is given in the present application.

**Claim 3** is an obvious combination of the principle of claim 1, see also D1, fig.1.

The sole difference between the state of the art and **claim 4** appears to be the composition of the sheet alloy, given that D1 does not explicitly refer to an Al-Si alloy. However, the use of 4xxx alloys in preforms and in foaming structures is in general known and usual.

**Claim 5** appears to contain a usual feature, i.e. a trivial selection of 4xxx Al-alloy for foaming structures, the merits or effects of the combination of the specific alloy were not set out in the application.

As far as the dependent **claims 8 and 9** is concerned their features are directly deduced from D1.

The same is also valid for **claim 10** (see D1, col.3, l.63-68), the lowering of the melting point is achieved by the addition of Zn in D1.

The same objection is raised for **claims 12 and 19**, if one considers the rolled structure of the preform per se (D1, fig.1), i.e. before the same is put into the empty space. This means that the rolled preform of D1 in a cut-out view consists of successive layers of the Al sheet (the two external Al layers in the role of claimed "external layers - skin plates", since cl. 12 provides also this possibility) interposed with the foaming agent.

The foamed product according to **claim 14** cannot be distinguished from any other foamed structure produced differently (see for example the classic "Frauenhoffer - process") or the final product of D1. This claim 14 cannot be allowed in the present form for reasons of novelty in view of the common marketed foamed products or foamed laminates.

**Claim 15** differs from the known technique applied in for example D1, in that, a "controlled load preferably in form of rolling" is applied on the preform. This feature does not appear however, to contribute to an inventive activity, since it is well known that the preforms to be foamed are rolled under pressure for better cohesion.

**INTERNATIONAL PRELIMINARY  
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(SEPARATE SHEET)**

International application No.

PCT/EP2004/004250